



## Office of Fissile Materials Disposition

United States Department of Energy

# Supplement to the Surplus Plutonium Disposition Draft Environmental Impact Statement

**April 1999**

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## Cover Sheet

**Responsible Agency:** United States Department of Energy (DOE)

**Title:** *Supplement to the Surplus Plutonium Disposition Draft Environmental Impact Statement (Supplement)* (DOE/EIS-0283-DS)

**Locations of Candidate Sites:** Idaho, North Carolina, South Carolina, Texas, Virginia, and Washington

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**Abstract:** On May 22, 1997, DOE published a Notice of Intent in the Federal Register (62 Federal Register 28009) announcing its decision to prepare an environmental impact statement (EIS) that would tier from the analysis and decisions reached in connection with the *Storage and Disposition of Weapons-Usable Fissile Materials Final Programmatic EIS (Storage and Disposition PEIS)*. The *Surplus Plutonium Disposition Draft Environmental Impact Statement (SPD Draft EIS)* (DOE/EIS-0283-D) was prepared in accordance with NEPA and issued in July 1998. It identified the potential environmental impacts of reasonable alternatives for the proposed siting, construction, and operation of three facilities for plutonium disposition. These three facilities would accomplish pit disassembly and conversion, immobilization, and MOX fuel fabrication. For the alternatives that included MOX fuel fabrication, the draft also described the potential environmental impacts of using from three to eight commercial nuclear reactors to irradiate MOX fuel. The potential impacts were based on a generic reactor analysis that used actual reactor data and a range of potential site conditions. In May 1998, DOE initiated a procurement process to obtain MOX fuel fabrication and reactor irradiation services. The request for proposals defined limited activities that may be performed prior to issuance of the SPD EIS Record of Decision (ROD) including non-site-specific work associated with the development of the initial design for the MOX fuel fabrication facility, and plans (paper studies) for outreach, long lead-time procurements, regulatory management, facility quality assurance, safeguards, security, fuel qualification, and deactivation. No construction on the proposed MOX facility would begin before an SPD EIS ROD is issued. In March 1999, DOE awarded a contract to Duke Engineering & Services; COGEMA, Inc.; and Stone & Webster (known as DCS) to provide the requested services. The procurement process included the environmental review specified in DOE's NEPA regulations in 10 CFR 1021.216. The six reactors selected are Catawba Nuclear Station Units 1 and 2 in South Carolina, McGuire Nuclear Station Units 1 and 2 in North Carolina, and North Anna Power Station Units 1 and 2 in Virginia. The *Supplement* describes the potential environmental impacts of using MOX fuel in these six specific reactors named in the DCS proposal as well as other program changes made since the SPD Draft EIS was published.

**Public Involvement:** Comments on the *Supplement* may be submitted by mail to DOE, Office of Fissile Materials Disposition, c/o Supplement to the SPD EIS, P.O. Box 23786, Washington, DC 20026-3786; by email at <http://www.doe-md.com> (Public Involvement, Comment Table, Send Us Email); by calling DOE at 1-800-820-5156; or by sending a facsimile (fax) message to DOE at 1-800-820-5156. To ensure consideration in the SPD Final EIS, these comments should be submitted within 45 days after the U.S. Environmental Protection Agency Notice of Availability is published in the Federal Register. Comments received after the end of the comment period will be considered to the extent possible. A public hearing will be held on the date and time

specified in a DOE Federal Register notice and announced in local media. Comments on the SPD Draft EIS can also be submitted at this hearing. Preregistration for the public hearing is available by calling 1-800-820-5134 or by fax at 1-800-820-5156. Additional information can be obtained by calling the contacts listed above, or by visiting the Office of Fissile Materials Disposition Web site at <http://www.doe-md.com>.

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## List of Acronyms

ALARA	as low as is reasonably achievable	NRC	U.S. Nuclear Regulatory Commission
APSF	Actinide Packaging and Storage Facility		
AQCR	Air Quality Control Region	ORNL	Oak Ridge National Laboratory
DCS	Duke Engineering & Services; COGEMA, Inc.; and Stone & Webster	PEIS	programmatic environmental impact statement
DOE	U.S. Department of Energy	PRA	probabilistic risk assessment
		PWR	pressurized water reactor
EIS	environmental impact statement	RFETS	Rocky Flats Environmental Technology Site
EPA	U.S. Environmental Protection Agency	ROD	Record of Decision
FMEF	Fuels and Materials Examination Facility	SALP	systematic assessment of licensee performance
FR	Federal Register	SI	sealed insert
HEPA	high-efficiency particulate air (filter)	SPD EIS	<i>Surplus Plutonium Disposition Environmental Impact Statement</i>
INEEL	Idaho National Engineering and Environmental Laboratory	SRS	Savannah River Site
IPE	Individual Plant Examination	SST	safe, secure trailer
ISLOCA	interfacing systems loss-of-coolant accident	UFSAR	Updated Final Safety Analysis Report
LANL	Los Alamos National Laboratory		
LCF	latent cancer fatality		
LEU	low-enriched uranium		
LLNL	Lawrence Livermore National Laboratory		
LLW	low-level waste		
LOCA	loss-of-coolant accident		
MACCS2	Melcor Accident Consequence Code System (computer code)		
MEI	maximally exposed individual		
MOX	mixed oxide		
NAAQS	National Ambient Air Quality Standards		
NEPA	National Environmental Policy Act of 1969		
NOI	Notice of Intent		
NPDES	National Pollutant Discharge Elimination System		

## I. Introduction

The *Surplus Plutonium Disposition Draft Environmental Impact Statement* (SPD Draft EIS) (DOE/EIS-0283-D) was prepared in accordance with the National Environmental Policy Act (NEPA) and issued in July 1998. It identified the potential environmental impacts of reasonable alternatives for the proposed siting, construction, and operation of three facilities for plutonium disposition. These three facilities would accomplish pit disassembly and conversion, plutonium conversion and immobilization, and mixed oxide (MOX) fuel fabrication. For the alternatives that included MOX fuel fabrication, the draft also described the potential environmental impacts of using from three to eight commercial nuclear reactors to irradiate MOX fuel. The potential impacts were based on a generic reactor analysis that used actual reactor data and a range of potential site conditions. In May 1998, DOE initiated a procurement process to obtain MOX fuel fabrication and reactor irradiation services. The request for proposals defined limited activities that may be performed prior to issuance of the SPD EIS Record of Decision (ROD) including non-site-specific work associated with the development of the initial design for the MOX fuel fabrication facility, and plans (paper studies) for outreach, long lead-time procurements, regulatory management, facility quality assurance, safeguards, security, fuel qualification, and deactivation. No construction on the proposed MOX fuel fabrication facility would begin before an SPD EIS ROD is issued. In March 1999, DOE awarded a contract to Duke Engineering & Services; COGEMA, Inc.; and Stone & Webster (known as DCS) to provide the requested services. The procurement process included the environmental review specified in the U.S. Department of Energy's (DOE's) NEPA regulations in 10 CFR 1021.216. This *Supplement* describes the potential environmental impacts of using MOX fuel in the six specific reactors at three sites named in the DCS proposal, as well as other program changes made since the SPD Draft EIS was published.

This *Supplement* consists of six sections that (1) explain the purpose and context of this *Supplement*, (2) add new sections to the SPD Draft EIS, or (3) revise and replace portions of the SPD Draft EIS. The first part is this introduction. The second part includes background information extracted from the SPD Draft EIS that provides an overview of DOE's ongoing NEPA review process for this program. The third part discusses changes that have been made to the program since issuance of the SPD Draft EIS, as well as the environmental implications of these changes. The fourth part describes the affected environment for the commercial reactor sites that are proposed to irradiate MOX fuel. The fifth part includes impacts analyzed for these reactor sites and replaces generic reactor information in the SPD Draft EIS.

The last part of this *Supplement* consists of three appendixes that either amend an existing appendix or add a new appendix to the SPD Draft EIS. Appendix A, *Federal Register Notices*, contains the Notice of Intent to publish this *Supplement*, which appeared in the Federal Register on April 6, 1999. Appendix K, *Facility Accidents*, and Appendix M, *Analysis of Environmental Justice*, include reactor-specific information that was not included in the SPD Draft EIS. This information, which is represented as stand-alone appendixes in this *Supplement*, will be appended to Appendixes A, K, and M in the SPD Final EIS. Appendix P, *Environmental Synopsis of Information Provided in Response to the Request for Proposals for MOX Fuel Fabrication and Reactor Irradiation Services*, is a new appendix that will be included in the SPD Final EIS.

During the public comment period on the SPD Draft EIS, DOE held five public meetings to solicit comments on the document. Comments were also received via fax, mail, phone answering machine, mail, and the MD Web site. DOE will present its responses to the comments as part of the SPD Final EIS. Comments presented both supporting and opposing views on the range of siting and technology alternatives being considered by DOE. Where specific, substantive technical issues were raised, DOE will make appropriate changes to the impact analysis in the SPD Final EIS. DOE is issuing this *Supplement* to provide an opportunity for public comment on sections that are being added to the SPD Draft EIS and sections that are being revised and replaced. DOE will

respond to comments previously provided on the SPD Draft EIS, as well as comments provided on this *Supplement*, in the SPD Final EIS anticipated later this year.

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## II. Background Information Extracted From the Surplus Plutonium Disposition Draft Environmental Impact Statement

In December 1996, DOE published the *Storage and Disposition of Weapons-Usable Fissile Materials Final Programmatic Environmental Impact Statement (Storage and Disposition PEIS)* (DOE 1996). This programmatic environmental impact statement (PEIS) analyzes the potential environmental consequences of alternative strategies for the long-term storage of weapons-usable plutonium and highly enriched uranium and the disposition of weapons-usable plutonium that has been or may be declared surplus to national security needs. The Record of Decision (ROD) for the *Storage and Disposition PEIS*, issued on January 14, 1997 (DOE 1997a), outlines DOE's decision to pursue a hybrid approach to plutonium disposition that would make surplus weapons-usable plutonium inaccessible and unattractive for weapons use. DOE's disposition strategy, consistent with the preferred alternative analyzed in the *Storage and Disposition PEIS*, allows for both the immobilization of some (and potentially all) of the surplus plutonium and use of some of the surplus plutonium as mixed oxide (MOX) fuel in existing domestic, commercial reactors. The disposition of surplus plutonium would also involve disposal of both the immobilized plutonium and the MOX fuel (as spent fuel) in a potential geologic repository.

On May 22, 1997, DOE published a Notice of Intent (NOI) in the Federal Register (FR) (DOE 1997b) announcing its decision to prepare an environmental impact statement (EIS) that would tier from the analysis and decisions reached in connection with the *Storage and Disposition PEIS*. This EIS, the *Surplus Plutonium Disposition Draft Environmental Impact Statement (SPD Draft EIS)* (DOE 1998), addresses the extent to which each of the two plutonium disposition approaches (immobilization and MOX) would be implemented and analyzes candidate sites for plutonium disposition facilities, as well as alternative technologies for immobilization.

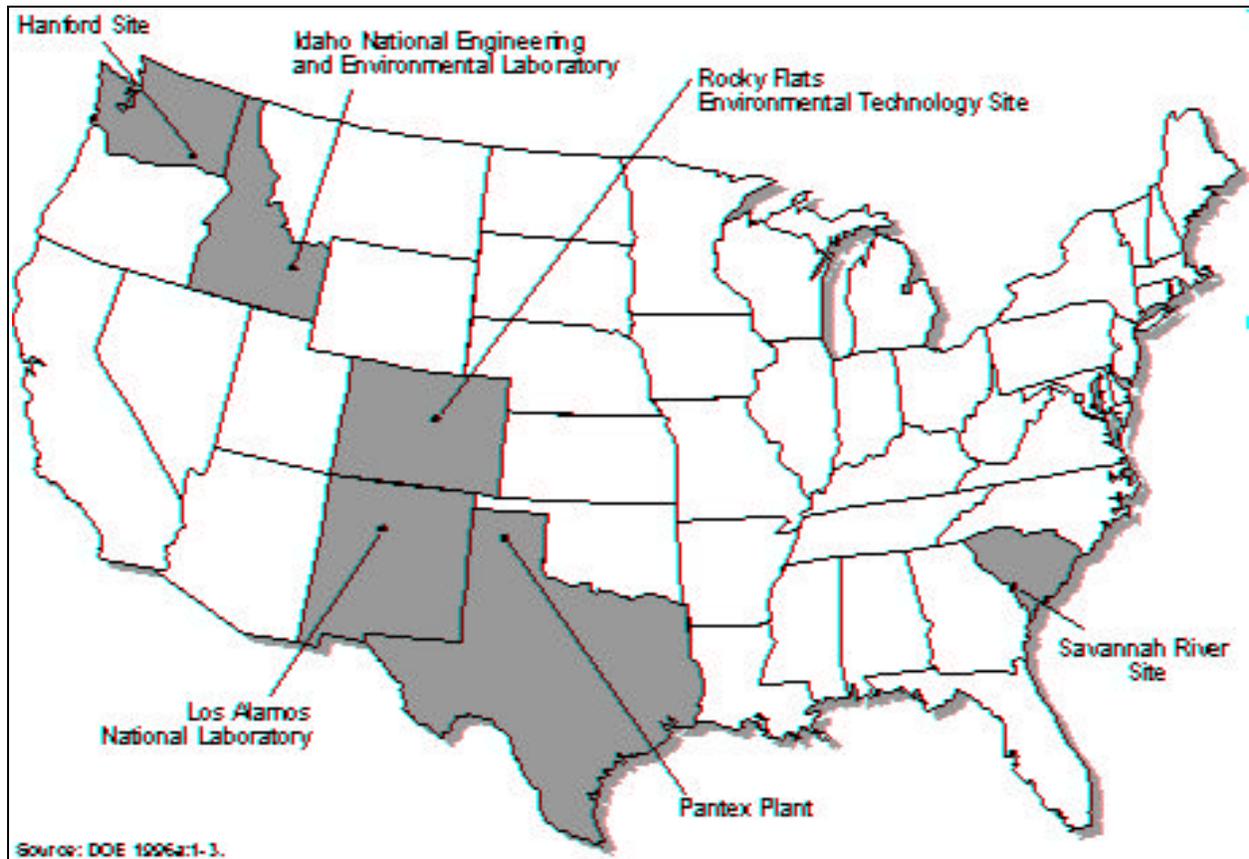
The SPD EIS analyzes a nominal 50 t (55 tons) of surplus weapons-usable<sup>1</sup> plutonium, which is primarily in the form of pits (a nuclear weapons component), metal, and oxides. In addition to 38.2 t (42 tons) of weapons-grade plutonium<sup>2</sup> already declared by the President as surplus to national security needs, the 50 t (55 tons) of material analyzed includes weapons-grade plutonium that may be declared surplus in the future, as well as weapons-usable, reactor-grade plutonium that is surplus to the programmatic and national defense needs of DOE.

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<sup>1</sup> Weapons-usable material includes plutonium or highly enriched uranium in forms (e.g., metals, oxides) that can be readily converted for use in nuclear weapons. Weapons-grade, fuel-grade, and power-reactor-grade plutonium are all weapons usable.

<sup>2</sup> Weapons-grade material includes plutonium or highly enriched uranium, in metallic form, that was manufactured for weapons application. Weapons-grade plutonium contains less than 7 percent plutonium 240.

As depicted in Figure II-1, surplus plutonium is stored at six locations within the DOE complex: the Hanford Site (Hanford) near Richland, Washington; Idaho National Engineering and Environmental Laboratory (INEEL) near Idaho Falls, Idaho; Los Alamos National Laboratory (LANL) near Los Alamos, New Mexico; the Pantex Plant (Pantex) near Amarillo, Texas; the Rocky Flats Environmental Technology Site (RFETS) near Golden, Colorado; and the Savannah River Site (SRS) near Aiken, South Carolina.



The *Storage and Disposition PEIS* ROD determined that DOE would immobilize at least 8 t (9 tons) of the current surplus plutonium due to the technology, complexity, timing, and cost that would be involved in purifying the material to make it suitable for MOX fuel fabrication. Since issuance of the ROD, further consideration has indicated that 17 t (19 tons) of the 50 t (55 tons) of surplus plutonium is not suitable for use in MOX fuel and should be immobilized. Therefore, fabricating all 50 t (55 tons) of surplus plutonium into MOX fuel is not a reasonable alternative and is not analyzed. As a bounding case, the SPD EIS does, however, analyze the immobilization of all the surplus plutonium. Moreover, given the variability in purity of the surplus plutonium to be dispositioned, some of the plutonium currently considered for MOX fabrication may also need to be immobilized.

The purpose of and need for the proposed action is to reduce the threat of nuclear weapons proliferation worldwide by conducting disposition of surplus plutonium in the United States in an environmentally safe and timely manner. Comprehensive disposition actions are needed to ensure that surplus plutonium is converted to proliferation-resistant forms. In September 1993, President Clinton issued the *Nonproliferation and Export Control Policy* (White House 1993) in response to the growing threat of nuclear proliferation. Further, in January 1994, President Clinton and Russia's President Yeltsin issued a *Joint Statement by the President of the Russian Federation and the President of the United States of America on Non-proliferation of Weapons of*

*Mass Destruction and the Means of Their Delivery* (White House 1994). In accordance with these policies, the focus of the U.S. nonproliferation efforts includes ensuring the safe, secure, long-term storage, and disposition of surplus weapons-usable fissile plutonium. The disposition activities proposed in the SPD EIS will enhance U.S. credibility and flexibility in negotiations on bilateral and multilateral reductions of surplus weapons-usable fissile materials inventories. Actions undertaken by the United States would generally be coordinated with efforts to address surplus plutonium stocks in the Russian Federation. For example, the construction of new facilities for disposition of U.S. plutonium will likely depend on progress in Russia. However, the United States will retain the option to begin certain disposition activities, when appropriate, in order to encourage the Russians and set an international example.

The SPD Draft EIS addresses both the immobilization and MOX approaches to surplus plutonium disposition, which include siting, construction, operation, and ultimate decontamination and decommissioning of three types of facilities at one or two of four DOE candidate sites:

- A facility for disassembling pits (a weapons component) and converting the recovered plutonium, as well as plutonium metal from other sources, into plutonium dioxide suitable for disposition. This facility, the pit disassembly and conversion facility, is referred to in this document as the *pit conversion facility*. Candidate sites for this facility are Hanford, INEEL, Pantex, and SRS.<sup>3</sup>
- A facility for immobilizing surplus plutonium for eventual disposal in a potential geologic repository pursuant to the Nuclear Waste Policy Act. This facility, referred to as the *immobilization facility*, would include a collocated capability for converting nonpit plutonium materials into plutonium dioxide suitable for immobilization. The immobilization facility would be located at either Hanford or SRS. DOE identified SRS as the preferred site for an immobilization facility in its *Notice of Intent* to prepare the SPD EIS. Technologies for immobilization are also discussed in the SPD EIS.
- A facility for fabricating plutonium dioxide into MOX fuel, the MOX fuel fabrication facility, is referred to as the *MOX facility*. Candidate sites for this facility are Hanford, INEEL, Pantex, and SRS. SRS has been identified as the preferred site for this facility. Also included in the SPD Draft EIS is a separate analysis of MOX lead assembly activities at five DOE candidate sites: Argonne National Laboratory–West (ANL–W) at INEEL; Hanford; Lawrence Livermore National Laboratory (LLNL) in Livermore, California; LANL; and SRS. DOE would fabricate a limited number of MOX fuel assemblies, referred to as lead assemblies, for testing in reactors before commencing fuel irradiation under the proposed MOX fuel program.

The SPD Draft EIS also analyzes a No Action Alternative, as required by the National Environmental Policy Act. In the No Action Alternative, surplus weapons-usable plutonium in storage at various DOE sites would remain at those locations. The vast majority of pits and plutonium metal would continue to be stored at Pantex, and the remaining plutonium in various forms would continue to be stored at Hanford, INEEL, LANL, RFETS, and SRS.

## REFERENCES

DOE (U.S. Department of Energy), 1996, *Storage and Disposition of Weapons-Usable Fissile Materials Final Programmatic Environmental Impact Statement*, DOE/EIS-0229, Office of Fissile Materials Disposition, Washington, DC, December.

<sup>3</sup> As announced in a Secretarial Press Release on December 22, 1998 (R-98-200), SRS is the preferred site for the pit disassembly and conversion facility.

DOE (U.S. Department of Energy), 1997a, *Record of Decision for the Storage and Disposition of Weapons-Usable Fissile Materials Final Programmatic Environmental Impact Statement*, 62 FR 3014, Office of the Federal Register, Washington, DC, January.

DOE (U.S. Department of Energy), 1997b, *Surplus Plutonium Disposition Environmental Impact Statement*, Notice of Intent, 62 FR 28009, Office of the Federal Register, Washington, DC, May 22.

DOE (U.S. Department of Energy), 1998, *Surplus Plutonium Disposition Draft Environmental Impact Statement*, DOE/EIS-0283D, Office of Fissile Materials Disposition, Washington, DC, July.

White House, 1993, *Nonproliferation and Export Control Policy*, Office of the Press Secretary, Washington, DC, September 27.

White House, 1994, *Joint Statement by the President of the Russian Federation and the President of the United States of America on Nonproliferation of Weapons of Mass Destruction and the Means of Their Delivery*, Office of the Press Secretary, Washington, DC, January 14.

### III. Summary of Changes Made to the Surplus Plutonium Disposition Program and New Information

Since the issuance of the *Surplus Plutonium Disposition Draft Environmental Impact Statement* (SPD Draft EIS), DOE has made some minor technical changes to the program and has revised information or added new information in response to stakeholder comments and to reflect DOE's current planning. These changes and their effect on the environmental impacts of the proposed action are described below.

- **Further definition of the preferred alternative.** DOE has identified the Savannah River Site (SRS) as the preferred alternative for pit disassembly and conversion, Los Alamos National Laboratory (LANL) for lead assembly fabrication, and Oak Ridge National Laboratory for postirradiation examination.
- **Changes to the immobilization facility.** Since the issuance of the SPD Draft EIS, DOE has developed a more detailed conceptual design for the immobilization facility. Some of the design changes include lengthening the process gloveboxes by about 35 percent; doubling the material conveyor length; changing to a vertical ceramification stack that affected the configuration of the second level of the facility; increasing the heating, ventilating, and air conditioning systems and electrical support to correspond with the increased process space; enlarging the space required for maintenance activities; and increasing the size of the canister-loading area. To accommodate these design modifications, the proposed immobilization facility has approximately doubled in size, in terms of floor space; however, the change in required land area varies among the alternatives, depending on the configuration of the facilities. Similarly, the environmental impacts attributable to the larger facility size vary by specific resource area and by alternative. No changes have been made to the basic processes proposed in the SPD Draft EIS for immobilization, to the amount of material being considered for immobilization, or to the rate of throughput.

For the alternatives that included immobilization at Hanford, the size of the immobilization facility varies depending on which of the other disposition facilities are also located at Hanford. The size ranges from 20,000 m<sup>2</sup> (215,000 ft<sup>2</sup>) to 21,600 m<sup>2</sup> (233,000 ft<sup>2</sup>); in the SPD Draft EIS, the facility varied in size from 6,698 m<sup>2</sup> (72,100 ft<sup>2</sup>) to 13,694 m<sup>2</sup> (147,400 ft<sup>2</sup>). The estimated land area required for construction and operation of the immobilization facility increased from 2.1 ha (5.2 acres) to as much as 8.3 ha (20 acres) for Alternative 4B where the immobilization facility is collocated with the MOX facility in the existing Fuels and Materials Examination Facility (FMEF); in order to accommodate the larger immobilization facility, a canister-loading facility would need to be constructed as a separate annex to FMEF. However, all new construction is in previously disturbed areas adjacent to existing facilities, so even with the larger facility, environmental impacts from construction are expected to be similar to those described in the SPD Draft EIS. Impacts from operation would be higher because of the approximately 24 percent increase in the number of workers and the correspondingly greater electricity, fuel, and water use requirements associated with the larger facility.

At SRS, the eight alternatives that included using portions of Building 221-F for immobilization were eliminated (Alternatives 3B, 5B, 6C, 6D, 7B, 9B, 12B, and 12D), based on the increased space requirements. These alternatives are no longer reasonable because the amount of new construction required for the proposed immobilization facility is now nearly the same whether the facility is located entirely in a new building or uses a portion of Building 221-F. There is no longer any advantage associated with the use of Building 221-F at SRS in terms of reducing the local environmental impacts, reducing costs, or shortening the construction schedule for this facility. Therefore, DOE has determined that there is no longer a reasonable basis for carrying forward both the Building 221-F and the new

facility options of the immobilization approach. Deletion of the Building 221-F option does not eliminate SRS from any of the immobilization alternatives under consideration. For all alternatives that originally considered both Building 221-F and a new facility at SRS as possible sites for the immobilization facility, DOE is still evaluating the new facility alternative.

For the remaining SRS alternatives, the size of the immobilization facility has increased from 13,000 m<sup>2</sup> (140,000 ft<sup>2</sup>) to 25,000 m<sup>2</sup> (269,000 ft<sup>2</sup>); however, the land area required for the immobilization facility is essentially the same as the amount analyzed in the SPD Draft EIS. Impacts from operation would be higher because of the approximately 33 percent increase in the number of workers and the correspondingly greater electricity, fuel, and water use requirements associated with the larger facility.

- **Changes resulting from the MOX procurement process.** Information provided as part of the MOX procurement process relating to the MOX facility, including the addition of a plutonium-polishing module to the front end of the MOX facility, was analyzed by DOE in an environmental critique prepared pursuant to the National Environmental Policy Act (NEPA) regulations in 10 CFR 1021.216 and summarized in an environmental synopsis. The synopsis is included in this *Supplement* (and will be included in the SPD Final EIS) as Appendix P. Information related to the affected environment for the domestic commercial reactors that would irradiate the MOX fuel is included in Section IV of this *Supplement* and will be added to the SPD Final EIS as Section 3.7. Environmental impacts analyzed for the actual reactor sites are presented in Section V of this *Supplement* and will be included as Section 4.28 of the SPD Final EIS.

Appendix N, *Plutonium Polishing*, will be deleted from the SPD Final EIS because that information will be incorporated in Chapter 4 of the SPD Final EIS. Because the selected contractor, DCS, prefers to include the polishing step at the MOX facility, plutonium polishing is no longer considered as a contingency for the pit conversion facility.

The impacts associated with the MOX facility (described in Appendix P of this *Supplement*) are essentially the same as those presented in Chapter 4 and Appendix N of the SPD Draft EIS. The size of the MOX facility has increased by approximately 4,200 m<sup>2</sup> (45,000 ft<sup>2</sup>). The analysis in the SPD Draft EIS considered 11,000 m<sup>2</sup> (119,000 ft<sup>2</sup>) for the MOX facility and 2,800 m<sup>2</sup> (30,000 ft<sup>2</sup>) for the plutonium-polishing module for a total of about 13,800 m<sup>2</sup> (149,000 ft<sup>2</sup>). In this *Supplement* and in the SPD Final EIS, the MOX facility is about 20,000 m<sup>2</sup> (215,000 ft<sup>2</sup>), which includes additional space proposed by DCS as well as space for the plutonium-polishing capability and about 2,000 m<sup>2</sup> (21,000 ft<sup>2</sup>) of administrative space that was located in separate support facilities in the SPD Draft EIS.

The amount of land required for construction has not changed, and the amount required during operation has only increased slightly (approximately 5 percent). The number of workers and the projected worker doses, as proposed by DCS, are less than those estimated in the SPD Draft EIS and are also presented in Appendix P of this *Supplement*. No changes have been made in the amount of material proposed to be made into MOX fuel or in the overall process to be used to fabricate the fuel.

- **DOE's decision to delay the construction of the Actinide Packaging and Storage Facility (APSF) at SRS.** In the SPD Draft EIS, alternatives that considered locating the surplus plutonium disposition facilities in new construction at SRS (Alternatives 3A and 3B, 5A and 5B, 6A and 6B, 7A, 9A, and 12A and 12C) took into account the use of the adjacent proposed APSF as a receiving facility for safe, secure trailer shipments; as a storage vault for storing plutonium oxide and metal; and for the pit and immobilization facilities, as a nondestructive assay facility. Therefore, the SPD Draft EIS analyzed somewhat smaller disposition facilities for these alternatives. Because the schedule for APSF is uncertain at this time, the disposition facilities analyzed in the SPD Final EIS will be modified to disregard any benefit to the proposed facilities as a result of APSF being present at SRS. These facility

changes are described in the following paragraphs and are expected to result in minor changes, if any, to the environmental impacts reported in the SPD Draft EIS.

The SPD Final EIS will present the environmental impacts that would be associated with the construction and operation of surplus plutonium disposition facilities at SRS that are stand alone and include no reliance on storage space or other functions at APSF. Throughout the SPD Final EIS, references to APSF will be qualified by the phrase “if built,” and no credit will be taken in the environmental analyses for the presence of APSF. If DOE decides to collocate all three disposition facilities at SRS as indicated in the preferred alternative (see Section 1.6 of the SPD Draft EIS), the final design of these facilities would coordinate potential common functions among the facilities to the extent practical as a means to reduce space requirements and the associated environmental impacts.

The pit conversion facility that will be analyzed at SRS in the SPD Final EIS is identical to that proposed in the Pantex alternatives, where it has always been considered as a stand-alone facility. The MOX facility proposed for SRS has also been replaced with the larger stand-alone facility that is the same as the facility proposed at the other candidate sites. No longer relying on APSF results in minor adjustments in facility construction requirements and associated impacts that will be reflected in minor changes to Chapter 4 of the SPD Final EIS.

As discussed earlier, the proposed immobilization facility at SRS has been increased in size based on further analysis of the functional requirements for immobilization. Some space would be available in the current immobilization design to partially offset the use of APSF for functions such as storage or accountability measurements. However, without APSF, the construction of truck bays and other minor modifications (up to approximately 980 m<sup>2</sup> [10,500 ft<sup>2</sup>]) would be necessary. These changes are not expected to substantially affect the environmental impacts associated with the larger immobilization facility that will be analyzed in the SPD Final EIS.

- **Pit repackaging requirements.** Based on estimates presented in the *Final EIS for the Continued Operation of Pantex and Associated Storage of Nuclear Weapons Components* (DOE 1996), 50 workers would be needed to repackage 12,000 pits from their current storage containers into containers that could also be used for shipping.<sup>1</sup> Work is currently underway to repackage pits from the AL-R8 container into the AL-R8 sealed insert (SI) container as discussed in the *Supplement Analysis for the Final Environmental Impact Statement for the Continued Operation of the Pantex Plant and Associated Storage of Nuclear Weapons Components—AL-R8 Sealed Insert Container* (DOE 1998). This effort would be completed over 10 years and the estimated annual dose received from repackaging activities would be about 73 mrem per worker. By locating the pit conversion facility at Pantex, it is expected that the additional dose associated with repackaging the surplus pits into shipping containers could be avoided. This would effectively reduce the total expected dose for these activities by 50 percent. If the pit conversion facility were sited at Pantex, the pits would be slowly moved from storage locations in storage containers on specially designed vehicles to the pit conversion facility instead of having to be put into offsite shipping containers. Over the 10-year operating life of the pit conversion facility, this would reduce the total estimated dose to involved Pantex transportation and staging workers

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<sup>1</sup> In the analysis presented in the *Pantex EIS* (DOE 1996), pits are assumed to be repackaged in AT-400A containers. The amount of effort involved in repackaging a pit in an AT-400A container is more intense than the effort needed to repackage a pit in a FL-type container or equivalent; therefore, the doses would be expected to be higher. Since the *Pantex EIS* was completed, it has been decided that surplus pits would not be repackaged in AT-400A containers. As a result, the dose estimates associated with repackaging pits as presented in the *Pantex EIS* are conservatively high for the SPD EIS. No effort has been made to reestimate the doses associated with repackaging pits. The doses presented in the SPD EIS are based on using the AT-400A container and, therefore, represent upper bounds on the expected dose to involved workers.

from 74 person-rem to 37 person-rem. Under either scenario, the estimated number of excess cancer fatalities associated with repackaging activities would be 0.03 or less.

- **Changes to cumulative impacts.** New or revised NEPA documents, such as the *Savannah River Site Spent Nuclear Fuel Management Draft EIS* and the *Final Environmental Impact Statement on Management of Certain Plutonium Residues and Scrub Alloy Stored at the Rocky Flats Environmental Technology Sites*, will result in changes to the discussion of cumulative impacts in the SPD Final EIS. In addition, cumulative impacts information will be added for Lawrence Livermore National Laboratory and LANL, two candidates sites for lead assembly fabrication. Because DOE has decided to use civilian light water reactors for the production of tritium rather than constructing a new linear accelerator at SRS, the impacts of construction and operation of that accelerator will no longer be included in the cumulative impacts section of the SPD Final EIS, thus reducing the overall cumulative impacts at that site.

## REFERENCES

DOE (U.S. Department of Energy), 1996, *Final Environmental Impact Statement for the Continued Operation of the Pantex Plant and Associated Storage of Nuclear Weapon Components*, DOE/EIS-0225, Albuquerque Operations Office, Albuquerque, NM, November.

DOE (U.S. Department of Energy), 1998, *Supplement Analysis for: Final Environmental Impact Statement for the Continued Operation of the Pantex Plant and Associated Storage of Nuclear Weapon Components—AL-R8 Sealed Insert Container*, Albuquerque Operations Office, Amarillo Area Office, Amarillo, TX, August.